

To the Chair of the Scientific Jury,

appointed by Order No. R-4186/16.07.2026

of the Rector of the Medical University of Plovdiv

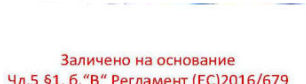
Submitted herewith: Review

for the competition for occupying the academic position “Associate Professor” in the scientific specialty “Physiology”, Field of Higher Education: 7. Healthcare and Sports, Professional Field 7.1. Medicine, announced for the needs of the Medical University of Plovdiv, Department of Physiology, in State Gazette No. 44/14.05.2026.

Prepared by: **Prof. Dr. Lyubomir Asenov Petrov**, PhD Scientific specialties: Physiology, Biochemistry Institution: National Sports Academy “Vasil Levski”, Sofia, Department of Physiology and Biochemistry

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Заличено на основание
Чл.5 §1, 6. "В" Регламент (ЕС)2016/679

Review

Only one candidate, Penka Angelova Angelova Hristova, has submitted documents for participation in the competition. The review has been prepared in accordance with the general rules for preparing reviews and opinions for competitions for occupying academic positions at the Medical University of Plovdiv. The candidate's research and teaching activities have been evaluated on the basis of the indicators of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), the Rules for its application, and the Regulation for occupying the respective academic position, adopted in the Rules for the structure and activities of the Medical University of Plovdiv.

I. Brief Biographical Data of the Candidate

Chief Assistant Dr. Penka Hristova Angelova was born on 1 December 1977 in the city of Plovdiv. She graduated from the Exemplary Mathematics High School "Acad. Kiril Popov", after which she obtained a Master's degree in Medicine at the Medical University of Plovdiv (1996–2002). She holds recognized specialties in General Medicine (2007) and Physiology (2014), as well as the educational and scientific degree of Doctor (2015). In the period 2024–2025, she also completed a Master's program in "Sports Physiology, Sports Cardiology and Sports Traumatology" at MU–Plovdiv and NSA "Vasil Levski".

Her professional experience includes more than 20 years of employment; since 2007, she has been an assistant in the Department of Physiology at MU–Plovdiv, and since 2016, she has held the position of Chief Assistant. In her teaching role, she teaches the full course in Human Physiology to students from all specialties at the Medical University, and she also participates in developing teaching manuals and test materials. Her research focuses on nutrition, physical exercise, sports medicine, obesity, and metabolic syndrome, including functional tests, dietary and training programs, and experimental studies with animal models. She has participated as a leading author or co-author in several scientific projects (IUP No. 37/2012, No. 35/2012, No. 05/2015).

Chief Assistant Angelova has authored more than 20 scientific articles in national and international journals and actively participates in scientific forums. She has been awarded an Honorary Diploma from the V International Conference of the Young Scientists – Plovdiv (2013) and a Best Article Certificate for the publication "Changed C-reactive protein and serum amyloid-A levels in blood, adipose tissue and liver of obesity induced rats". She has a very good command of English, a good

command of Russian, and a basic command of French. She has good computer skills, including Microsoft Office and SPSS.

II. General Characteristics of the Materials Submitted for Review

The candidate has submitted the required documents - a curriculum vitae, diploma for higher education with its transcript, diploma for the educational and scientific degree "Doctor", a reference for occupying the academic position "Chief Assistant" and a service certificate confirming professional experience in the specialty, a medical certificate, a declaration of authenticity of the provided information, and a reference for meeting the national minimum requirements and those of the Rules for occupying academic positions at MU-Plovdiv, which includes:

- Dissertation for the educational and scientific degree "Doctor" - 50 points from group A1;
- Habilitation work - monograph - 1 item - 100 points from group B3;
- Publications in scientific journals referenced and indexed in internationally recognized databases - 12 items, all co-authored - 138.42 points from group G7;
- Publications in scientific journals included in the national reference list - 15 items, all co-authored - 99.56 points from group G8;
- Published chapter in a collective monograph - 6.67 points from group G9;
- Citations or reviews in scientific journals referenced and indexed in internationally recognized databases or in monographs and collective volumes - 16 citations - 240 points from group D10;
- Acquired specialty in General Medicine - 40 points from group D15;
- Participation in an international scientific or educational project - 20 points from group E17;
- Published university textbook or teaching aid used in the educational network - 23 items - total 40 points;
- Teaching workload (lectures and exercises) - 1090 points from group Zh;
- Academic position: Chief Assistant - 10 years - 1000 points from group Zh.

The reference is accompanied by sufficient supporting documentation.

The submitted materials were reviewed at a meeting of the Commission on Candidate Eligibility for Participation in the Competition and at a meeting of the Scientific Jury, and it was accepted that they meet the requirements of the Law on the Development of the Academic Staff in Bulgaria (LDASRB), the Rules for its application, and the Rules for occupying academic positions at MU–Plovdiv.

Thus, the materials submitted by the candidate for participation in the competition meet the science-metric requirements by groups of indicators for occupying the academic position “Associate Professor”, 7.1. Medicine, scientific specialty “Physiology”.

III. Teaching and Pedagogical Activity of the Candidate

Dr. Penka Angelova's teaching and pedagogical activity is distinguished by consistent professional development, sustained contributions to the teaching of physiology, and significant engagement in creating educational materials. She has progressed through all major academic stages of the teaching career: since 2007, she has been an assistant in the Department of Physiology at MU–Plovdiv, and since 2016, she has served as Chief Assistant, reflecting steady advancement and recognized competence in teaching the discipline.

Her activity encompasses the full course of instruction in “Human Physiology” for a wide range of specialties: medicine, dental medicine, pharmacy, nursing, midwifery, rehabilitation, assistant-pharmacist, medical and X-ray laboratory technician, public health inspector, dental technician, as well as nutrition and food safety instructor. This scope demonstrates strong adaptability across professional profiles and the ability to present complex material to audiences with varying levels of preparation.

Her educational materials are particularly impressive. The submitted reference lists 23 manuals, collections, and teaching aids in which Dr. Angelova is a co-author. These include manuals for practical exercises in physiology (2011, 2016, 2018), collections of questions for students in medicine, dental medicine, nursing, and midwifery, and English-language editions for international students. The published materials have ISBN numbers and are used in the educational process at MU–Plovdiv, clearly indicating their established role in teaching. The candidate's

participation in numerous author teams demonstrates sustained collaboration within the department and an active role in developing modern, practice-oriented educational resources.

In summary, Dr. Penka Angelova's teaching and pedagogical activity is impressively rich, systematic, and demonstrably beneficial to students across multiple specialties. She combines long-standing teaching experience, active work in creating educational materials, and proven commitment to the quality of physiological education at the Medical University of Plovdiv.

IV. Areas of Scientific Interest and Evaluation of Contributions

Dr. Penka Angelova's research activity is characterized by clearly structured directions, sustained development of original experimental models, and consecutive studies in metabolic syndrome (MetS), exercise physiology, and sports medicine. The presented results demonstrate a mature scientific profile that combines fundamental physiological concepts with methods applicable to clinical practice and sports. The studies span multiple years, are methodologically sound, and are supported by funding through an intra-university project, which underscores their scientific and institutional significance.

1. Experimental Models for Inducing Metabolic Syndrome in Rats

1.1. Model Without Added Cholesterol for Metabolic Syndrome at Normal Body Mass

Chief Assistant Penka Angelova participates in developing a dietary regimen without added cholesterol to induce metabolic syndrome in rats. It is characterized by normal body mass in the animals.

This model represents an important scientific contribution because it allows the study of MetS in individuals with normal body mass, a phenotype that often remains underestimated in clinical practice but is associated with increased cardiometabolic risk. The model is particularly valuable for investigating hypertriglyceridemia and low HDL under conditions of limited saturated fat intake, making it suitable for evaluating therapeutic interventions in specific populations, including patients with so-called “metabolically obese normal weight”.

Results on this topic have been published in the following scientific works submitted by Penka Angelova for participation in the present competition:

Angelova P., Boyadjiev N., Georgieva K., Terzieva D., Atanassova P., Hrishev P. Effects from the application of a high-fat-carbohydrate diet without additional cholesterol for the inducement

of Metabolic syndrome in rats. American International Journal of Contemporary Research, 3(9), 42–50, 2013.

Penka Angelova, Nikolay Boyadjiev, Katerina Georgieva, Dora Terzieva, Pepa Atanassova, Petar Hrishev. Basic clinical-chemical characteristics of rats subjected to a combined high-lipid and high-carbohydrate diet without added cholesterol. Proceedings of the Scientific Session "Science and Youth": 176–179, 2013.

Angelova P., Boyadjiev N., Georgieva K., Atanassova P., Hrishev P. Submaximal endurance and time to exhaustion in rats subjected to a combined high-lipid and high-carbohydrate diet without added cholesterol. Fourth Workshop "Experimental Models and Methods in Biomedical Research" – BAS, Sofia, Bulgaria, 158–161, 2013.

1.2. Combined Model with Added Cholesterol for Metabolic Syndrome with Insulin Resistance

Dr. Penka Angelova participates in developing a new combined dietary model with added cholesterol to induce metabolic syndrome with insulin resistance.

This model is particularly important because it leads to the manifestation of all major components of MetS, including insulin resistance, dyslipidemia, reduced physical performance, and impaired adaptation to exercise. It is easily applicable, accessible, and allows detailed study of the pathogenetic mechanisms of MetS. Its significance is further emphasized by the fact that it provides an opportunity to test various therapeutic approaches - dietary, training, and combined - in controlled experimental conditions.

Results on this topic have been published in the following scientific works submitted by Penka Angelova for participation in the present competition:

Angelova P., Terzieva D., Georgieva K., Damyanov Iv., Atanassova P., Hrishev P. and Boyadjiev N. IL-6 levels in rats after application of two high-fat-carbohydrate diets for 16 weeks. Anniversary Scientific Conference 20 Years Trakia University. Stara Zagora, Bulgaria, 2015.

Angelova P., Boyadjiev N., Georgieva K., Atanassova P., Hrishev P., Terzieva D. and Popov D. Basic clinical-chemical characteristics of rats with metabolic syndrome after eight weeks of non-pharmacological therapy. Endocrinology; 10(1): 33–42, 2015.

Angelova P., Boyadjiev N., Georgieva K., Atanassova P., Hrishev P., Terzieva D. and Georgiev N. Maximum time to exhaustion in rats with metabolic syndrome after eight weeks of non-pharmacological therapy. Proceedings of the Union of Scientists in Bulgaria – Plovdiv, Volume XVI: 43–47, 2015.

Angelova P., Boyadjiev N., Georgieva K., Atanassova P., Hrishev P. Submaximal endurance and maximum time to exhaustion in rats subjected to a combined high-lipid and high-carbohydrate diet. Proceedings of the Union of Scientists in Bulgaria – Plovdiv, Volume XIV: 287–290, 2013.

The publication received an award from the Fifth International Conference of Young Scientists, Plovdiv, 2013.

Angelova P., Boyadjiev N., Georgieva K., Atanassova P. and Hrishev P. Body mass and BMI in rats with metabolic syndrome after eight weeks of non-pharmacological treatment. Anniversary Scientific Conference “Science for Health”, 70 Years Medical University of Plovdiv. Plovdiv, Bulgaria, 2015.

Angelova P., Georgieva K., Atanassova P., Terzieva D., Hrishev P. and Boyadjiev N. Running economy in rats with metabolic syndrome after eight weeks of non-pharmacological treatment. XI Congress of the Bulgarian Society of Physiological Sciences. Plovdiv, Bulgaria, 2015.

2. Non-Pharmacological Regimens for the Treatment of Metabolic Syndrome

Dr. Angelova tested three non-pharmacological approaches: dietary, training, and combined, with the combined regimen showing the best results. These studies matter because non-pharmacological interventions are first-line therapy for MetS and are important for public health. We monitored clinical-chemical indicators, aerobic capacity, time to exhaustion, and resting energy expenditure.

A state of reduced resting energy expenditure was observed, allowing testing of various methods to increase energy expenditure.

This result is particularly valuable, as reduced resting energy expenditure is characteristic of patients with MetS and complicates weight reduction. Dr. Angelova's studies reveal opportunities to develop strategies to increase it, with direct clinical significance.

Publications by the candidate on this topic:

Angelova P., Boyadjiev N. and Georgieva K. Aerobic capacity of rats subjected to a combined high-fat-carbohydrate diet. Indian Journal of Applied Research; 3(10), 2013.

Angelova P., Georgieva K., Boyadjiev N., Atanassova P., Hrishev P. Changes in energy expenditure following the application of a combined high-lipid and high-carbohydrate diet. Proceedings of the Union of Scientists in Bulgaria – Plovdiv, Volume XIII: 34–37, 2013.

Based on substantial scientific research (Angelova & Boyadjiev, 2013), the candidate, Dr. Angelova, proposes and implements two dietary models to induce metabolic syndrome in rats. In her dissertation, she tests three non-pharmacological regimens for treating metabolic syndrome - dietary, physical exercise, and combined (the most successful being the combined regimen). Together with the research team, functional and clinical-chemical disturbances were monitored during the application of a high-lipid and high-carbohydrate diet (with and without added cholesterol). The team also monitored functional and clinical-chemical changes under three non-pharmacological regimens for treating metabolic syndrome in rats. The study was developed over several years through consecutive experiments with Wistar rats (with the respective permits from the Bulgarian Food Safety Agency and the Ethics Committee of the Medical University of Plovdiv).

Angelova P. & Boyadjiev N. A review on the models of obesity and metabolic syndrome in rats. Trakia Journal of Sciences; 11(1): 5–12, 2013.

To carry out the experiments, the candidate received funding under an intra-university project (Project No. 37/2012) of the Medical University of Plovdiv entitled “Changes in metabolism at different stages of the induction of metabolic syndrome in rats and the effects of non-pharmacological modification of the condition”.

3. Scientific Interests in the Field of Sports Physiology and Adaptation to Exercise

3.1. Spiroergometric Tests and Medical Indications for Termination

Dr. Angelova and her team raise the issue of terminating exercise tests on medical grounds in Bulgarian elite football players.

This study is important because it shows that even in professional athletes with excellent physical preparation, physiological reactions may occur that necessitate termination of the test. The results

have practical significance for sports medicine, the safety of the training process, and the optimization of exercise load in elite athletes.

Publication by the candidate on this topic:

Angelova P., Kanalev K., Boyadjiev N., Grancharov S. Spiroergometry tests of professional soccer players terminated at medical indications. International Journal Knowledge, 32(2), 271–275, 2019.

3.2. Comparative Studies of Aerobic Capacity in Different Sports

Dr. Angelova identifies significant differences in aerobic capacity between elite swimmers, aerobic gymnastics competitors, football players, and weightlifters. These results matter because they show sport-specific physiological adaptation and support optimizing training regimens. The studies contribute to understanding the different energy systems used in various sports.

We identified differences in indicators of aerobic capacity between elite swimmers and aerobic gymnastics competitors in adolescence.

Publications by the candidate on this topic:

Angelova P., Damyanov I., Ivanova A., Hrishev P., Georgiev N. and Boyadjiev N. Indicators of aerobic capacity in elite swimmers and aerobic gymnastics competitors in adolescence. Proceedings of the Union of Scientists in Bulgaria – Plovdiv, Volume XXI: 8–11, 2017.

Angelova P., Kanalev K. and Boyadjiev N. Aerobic and cardiac performance of elite weightlifters and soccer players. International Journal Knowledge, 34(6): 1811–1818, 2019

Angelova P., Kanalev K. and Boyadjiev N. Aerobic and cardiac performance of elite weightlifters and soccer players. International Journal Knowledge, 34(6): 1811–1818, 2019.

3.3. Effects of Intensive Training Programs

In one study, Dr. Penka Angelova and her team found that a 20-day intensive training program increases grip strength. This study matters because it shows differences in adaptation to strength training between male and female elite athletes. The results are significant for individualizing training programs and optimizing preparation in strength sports.

Publication by the candidate on this topic:

Dobrin P., Kanalev K., Bancelova M., Boyadjiev N., Raichev I., Angelova P. Effect of a 20-day training program on grip strength in elite weightlifters. Knowledge International Journal, 2023, Vol. 61.

4. Summary Evaluation of Scientific Contributions

Dr. Penka Angelova's scientific interests focus on the pathophysiology of metabolic syndrome, the development of experimental models, non-pharmacological therapeutic approaches, and sports physiology. The contributions are original, methodologically sound, and supported by consecutive experiments conducted in accordance with ethical standards. The activity is funded through an intra-university project, underscoring institutional support and the research's significance.

Dr. Angelova's scientific output demonstrates maturity, originality, and contribution, fully corresponding to the requirements for the academic position of Associate Professor.

V. Critical Notes and Recommendations

We recommend continuing research in the already selected scientific directions, which are of great interest to medical science and practice.

VI. Conclusion

The scientific and teaching activity of Chief Assistant Dr. Penka Angelova Angelova Hristova, as reflected in the materials submitted by her for participation in the present competition, fully corresponds to the requirements of the regulatory documents for acquiring the academic position "Associate Professor".

I confidently give a positive evaluation and recommend that the scientific jury prepare a report-proposal for occupying the academic position of Associate Professor in the field of higher education 7. Healthcare and Sports, professional field 7.1. Medicine, scientific specialty "Physiology", at the Department of Physiology of the Medical University of Plovdiv.

13 September 2026

Signature: _____

Заличено на основание
Чл.5 §1, 6."В" Регламент (ЕС)2016/679

(Prof. Dr. Lyubomir Petrov, PhD)